

WHAT IS CLAIMED IS:

1. An organic electro luminescence display panel comprising:
a hole transport layer; and
a luminescent layer disposed on the hole transport layer,
wherein the luminescent layer includes at least first and
second luminescent layers,

wherein the first and second luminescent layers are repeatedly
arranged on the hole transport layer so as to be adjacent each other,

wherein the first luminescent layer includes a first dopant
for emitting a first light having a first wavelength, and the second
luminescent layer includes a second dopant for emitting a second
light having a second wavelength, which is shorter than the first
wavelength, and

wherein no first dopant is disposed between the hole transport
layer and the second luminescent layer.

2. The display panel according to claim 1, further
comprising:

a substrate;
an anode layer;
an electron transport layer; and
a cathode layer,

wherein the anode layer, the hole transport layer, the
luminescent layer, the electron transport layer and the cathode
layer are disposed on the substrate in this order.

3. The display panel according to claim 1,

wherein the hole transport layer includes a plurality of parts of the hole transport layer.

4. The display panel according to claim 2, further comprising:

a hole injection layer disposed between the anode layer and the hole transport layer.

5. The display panel according to claim 3, wherein the parts of the hole transport layer include at least first and second part hole transport layers, which correspond to the first and second luminescent layers, respectively, and

wherein both of the first luminescent layer and the first part hole transport layer are formed independently from the second luminescent layer and the second part hole transport layer.

6. The display panel according to claim 5, wherein one of the first and second luminescent layers and one part of the hole transport layer corresponding to the one of the first and second luminescent layers are successively formed so that no dopant of the other one of the first and second luminescent layers is disposed between the one part of the hole transport layer and the one of the first and second luminescent layers.

7. The display panel according to claim 6, wherein the first luminescent layer is formed with using a time-sharing method before the second luminescent layer is formed.

8. The display panel according to claim 3,
wherein the luminescent layer further includes a third luminescent layer, which includes a third dopant for emitting a third light having a third wavelength,

wherein the first light is a red light, the second light is a green light, and the third light is a blue light, and

wherein the first, second and third luminescent layers are repeatedly arranged on the hole transport layer so as to be adjacent together.

9. The display panel according to claim 2,
wherein no first dopant is disposed between the electron transport layer and the second luminescent layer.

10. The display panel according to claim 9,
wherein the electron transport layer includes a plurality of parts of the electron transport layer.

11. The display panel according to claim 9, further comprising:

a hole injection layer disposed between the anode layer and the hole transport layer.

12. The display panel according to claim 10,
wherein the parts of the electron transport layer include at least first and second part electron transport layers, which correspond to the first and second luminescent layers, respectively,

and

wherein both of the first luminescent layer and the first part electron transport layer are formed independently from the second luminescent layer and the second electron transport layer.

13. The display panel according to claim 12,

wherein one of the first and second luminescent layers and one part of the electron transport layer corresponding to the one of the first and second luminescent layers are successively formed so that no dopant of the other one of the first and second luminescent layers is disposed between the one part of the electron transport layer and the one of the first and second luminescent layers.

14. The display panel according to claim 13,

wherein the second luminescent layer is formed on the hole transport layer with using a time-sharing method before the first luminescent layer is formed on the hole transport layer.

15. The display panel according to claim 9,

wherein the luminescent layer further includes a third luminescent layer, which includes a third dopant for emitting a third light having a third wavelength,

wherein the first light is a red light, the second light is a green light, and the third light is a blue light, and

wherein the first, second and third luminescent layers are repeatedly arranged on the hole transport layer so as to be adjacent together.

16. An organic electro luminescence display panel comprising:

a hole transport layer; and
a luminescent layer disposed on the hole transport layer,
wherein the luminescent layer includes at least first and second luminescent layers,

wherein the first and second luminescent layers are repeatedly arranged on the hole transport layer so as to be adjacent each other, and

wherein at least one of the first and second luminescent layers includes a hole transporting material as a host material.

17. The display panel according to claim 16, further comprising:

a substrate;
an anode layer;
an electron transport layer; and
a cathode layer,

wherein the anode layer, the hole transport layer, the luminescent layer, the electron transport layer and the cathode layer are disposed on the substrate in this order, and

wherein the first luminescent layer includes a first dopant for emitting a first light having a first wavelength, and the second luminescent layer includes a second dopant for emitting a second light having a second wavelength, which is shorter than the first wavelength.

18. The display panel according to claim 16,

wherein the hole transporting material of the one of the first and second luminescent layers is disposed at an interface between the other one of the first and second luminescent layers and the hole transport layer.

19. The display panel according to claim 18,

wherein the interface further includes an electron transporting material for composing the other one of the first and second luminescent layers.

20. The display panel according to claim 17,

wherein the second luminescent layer is formed on the hole transport layer with using a time-sharing method before the first luminescent layer is formed on the hole transport layer.

21. The display panel according to claim 17,

wherein the luminescent layer further includes a third luminescent layer, which includes a third dopant for emitting a third light having a third wavelength,

wherein the first light is a red light, the second light is a green light, and the third light is a blue light, and

wherein the first, second and third luminescent layers are repeatedly arranged on the hole transport layer so as to be adjacent together.

22. The display panel according to claim 16,

wherein the electron transport layer is made of an electron transporting material having an ionization potential, and

wherein the hole transporting material in the one of the first and second luminescent layers has another ionization potential, which is 0.2eV lower than that of the electron transporting material in the electron transport layer.

23. The display panel according to claim 22,

wherein both of the first and second luminescent layers are made of the electron transporting material as a host material.

24. A method for manufacturing an organic electro luminescence display panel, which includes a hole transport layer and a luminescent layer disposed on the hole transport layer, wherein the luminescent layer includes at least first and second luminescent layers, which are repeatedly arranged on the hole transport layer so as to be adjacent each other, and wherein one of the first and second layers includes a hole transporting material as a host material, the method comprising the step of:

forming the one of the first and second luminescent layers on the hole transport layer; and

forming the other one of the first and second luminescent layers on the hole transport layer after the step of forming the one of the first and second luminescent layers.

25. The method according to claim 24,

wherein the first luminescent layer includes a first dopant

for emitting a first light having a first wavelength, and the second luminescent layer includes a second dopant for emitting a second light having a second wavelength, which is shorter than the first wavelength, and

wherein the second luminescent layer is formed on the hole transport layer before the first luminescent layer is formed on the hole transport layer.

26. The method according to claim 25,

wherein the display panel further includes a substrate, an anode layer, an electron transport layer and a cathode layer, and

wherein the anode layer, the hole transport layer, the luminescent layer, the electron transport layer and the cathode layer are disposed on the substrate in this order.

27. The method according to claim 24,

wherein the hole transporting material of the one of the first and second luminescent layers is disposed at an interface between the other one of the first and second luminescent layers and the hole transport layer.

28. The method according to claim 27,

wherein the interface further includes an electron transporting material for composing the other one of the first and second luminescent layers.

29. The method according to claim 26,

wherein the luminescent layer further includes a third luminescent layer, which includes a third dopant for emitting a third light having a third wavelength,

wherein the first light is a red light, the second light is a green light, and the third light is a blue light, and

wherein the first, second and third luminescent layers are repeatedly arranged on the hole transport layer so as to be adjacent together.

30. A method for manufacturing an organic electro luminescence display panel, which includes a hole transport layer and a luminescent layer disposed on the hole transport layer, wherein the luminescent layer includes at least first and second luminescent layers, which are repeatedly arranged on the hole transport layer so as to be adjacent each other, and wherein the hole transport layer includes at least first and second part hole transport layers, which correspond to the first and second luminescent layers, respectively, the method comprising the step of:

forming one of the first and second part hole transport layers;

forming one of the first and second luminescent layers on the one of the first and second part hole transport layers;

forming the other one of the first and second part hole transport layers; and

forming the other one of the first and second luminescent layers on the other one of the first and second part hole transport layers.

31. The method according to claim 30,

wherein both of the first luminescent layer and the first part hole transport layer are formed independently from the second luminescent layer and the second part hole transport layer, and

wherein the first luminescent layer is formed successively on the first part hole transport layer, and the second luminescent layer is formed successively on the second part hole transport layer.

32. The method according to claim 31,

wherein the display panel further includes a substrate, an anode layer, an electron transport layer and a cathode layer, and

wherein the anode layer, the hole transport layer, the luminescent layer, the electron transport layer and the cathode layer are disposed on the substrate in this order.

33. The method according to claim 32,

wherein the first luminescent layer includes a first dopant for emitting a first light having a first wavelength, and the second luminescent layer includes a second dopant for emitting a second light having a second wavelength, which is shorter than the first wavelength, and

wherein the second luminescent layer is formed before the first luminescent layer is formed.

34. The method according to claim 33,

wherein the luminescent layer further includes a third luminescent layer, which includes a third dopant for emitting a third

light having a third wavelength,

wherein the first light is a red light, the second light is a green light, and the third light is a blue light,

wherein the hole transport layer further includes a third part hole transport layer, which corresponds to the third luminescent layer,

wherein the first, second and third luminescent layers are repeatedly arranged on the hole transport layer so as to be adjacent together,

wherein the one of the first and second part hole transport layers is the first part hole transport layer, and the one of the first and second luminescent layers is the first luminescent layer,

wherein the other one of the first and second part hole transport layers is the second part hole transport layer, and the other one of the first and second luminescent layers is the second luminescent layer,

wherein the method further comprising:

forming the third part hole transport layer; and

forming the third luminescent layer successively on the third part hole transport layer, and

wherein the third, second and first luminescent layers are formed in this order.